

Claims

1. An input device for control signals for controlling the movement of an object represented on a display device, comprising
 - a housing (24),
 - three control signal generating devices (38, 40, 42) for generating first control signals to the display device,
 - three mutually orthogonal actuating elements (32, 34, 36), each being supported at or in the housing (24) for linear displacement along one of three orthogonal spatial axes (x, y, z) and projecting outward beyond the housing (24) within at least one of two opposite portions of the housing (24), respectively, each actuating element (32, 34, 36) respectively cooperating with a different one of the control signal generating devices (38, 40, 42), and wherein, in dependence on the displacement position of the actuating elements (32, 34, 36), the control signal generating devices (38, 40, 42) generate the first control signals for displacement of the object on the display device along three directions corresponding to the spatial axes of the housing (24) on the display device, and
 - a position detection sensor arrangement (46) provided in or at the housing (24), the position detection arrangement (46) sensing the orientation and/or the position of the housing (24) and generating a corresponding control signal to the display device for orienting the object on the display device according to the orientation and position of the housing (24).

2. The input device of claim 1, wherein the actuating elements (32, 34, 36) are supported in or at the housing (24) around a rest position, in particular centered about a rest position, and automatically move back into the rest position upon displacement from the same.
3. The input device of claim 2, wherein, only upon a displacement from the rest position, will the control signal generating devices (38, 40, 42) generate control signals in dependence on the direction and/or degree of displacement.
4. An input device for control signals for controlling the movement of an object represented on a display device, comprising
 - a housing (24),
 - three control signal generating devices (38, 40, 42) for generating first control signals to the display device,
 - three pairs of actuating elements, both actuating elements in each pair being arranged at different, in particular opposite, portions of the housing lying on a respective one of three orthogonal spatial axes extending through the housing, each pair of actuating elements respectively cooperating with a different one of the control signal generating devices, and wherein, in dependence on the actuating condition (e.g., actuating time and/or actuating pressure) of the actuating elements, the control signal generating devices generate the first control signals for displacement of the object on the display device along three directions corresponding to the spatial axes of the housing on the display device, and

- a position detection sensor arrangement provided in or at the housing, the position detection arrangement sensing the orientation and/or the position of the housing and generating a corresponding control signal to the display device for orienting the object on the display device according to the orientation and position of the housing.

5. The input device of one of claims 1 to 4, wherein the actuating elements (32, 34, 26) are supported at or in the housing (24) for rotation about their axes (x, y, z) extending in the respective direction of displacement and wherein the control signal generating devices (38, 40, 42) generate second control signals to the display device (10) in dependence on the rotational positions of the actuating elements (32, 34, 26).
6. The input device of one of claims 1 to 5, wherein a rotary actuating element (50, 52, 54) is provided per actuating element (32, 34, 36), which is rotatable around the axis of the associated actuating element (32, 34, 26) extending in the direction of displacement (x; y; z) and wherein the control signal generating devices (38, 40, 42) or additional control signal generating devices (56, 58, 60) generate second control signals to the display device (10) in dependence on the rotational position of the rotary actuating elements (50, 52, 54).
7. The input device of claim 6, wherein the actuating elements (32, 34, 36) penetrate the rotary actuating elements (50, 52, 54).
8. The input device of one of claims 1 to 7, wherein at or in the housing (24), switches or key switches or other actuating elements (48) are arranged for providing further control signals to the display device (10).

9. The input device of one of claims 1 to 8, wherein, per actuating element (32, 34, 36) and - if provided - per rotary actuating element (50, 52, 54), one means (62) for preventing further displacement or turning, the means being controllable by the display device in dependence on the position an object represented on the display device is in within an environment also represented on the display device.
10. The input device of claim 9, wherein the preventing means (62) comprises a mechanical braking/blocking device for blocking the respective actuating element (32, 34, 36) and/or the rotary element (50, 52, 54), or a drive means for moving or turning the actuating element (32, 34, 36) and/or the rotary actuating element (50, 52, 54).
11. The input device of one of claims 1 to 10, wherein the housing (24) has the shape of a parallelepiped, in particular a cube, and the actuating elements (32, 34, 36) protrude from all side walls (26, 28, 30) of the housing (24) or are arranged on all side walls (26, 28, 30) of the housing (24).
12. The input device of one of claims 1 to 11, wherein the housing is spherical in shape and the actuating elements are protrude from or are arranged in substantially diametrically opposite regions.
13. The input device of one of claims 1 to 12, wherein the housing substantially corresponds to the outer contour of an object to be displayed on the display device and the actuating elements are arranged corresponding to the axes along which the object may be controlled in its representation.

14. A display system for representing sectional views of an object that are adapted to be displaced along orthogonal axes, comprising

- a display device (10) and
- an input device (22) for generating control signals for displacing and/or orienting and/or positioning the object to be represented and/or displacing the sectional views along the axes (x,y,z), the input device (22) being configured according to one of the previous claims.